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THE MEDICATION
OF THE
LARYNX AND TRACHEA.

BY
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LONDON:
JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCLIII.

PREFACE.

PERHAPS it is incumbent on me to apologise for claiming the attention of my professional brethren to what may appear a very insignificant topic, the medication of the interior of the wind-pipe.

It is not, however, to my mind, wholly insignificant, though, perhaps, it is scarcely worthy of the distinction of having an entire book, even a very small one, devoted to it; but if I delay writing on this subject until I have leisure to write on others, there is some fear that I shall write on none, or not until the treatment recommended shall even to myself have lost much of its interest.

I have only further to express my thanks to Dr. John Roberts for having urged me to try the probang; to Mr. Erasmus Wilson for suggesting the trial of Glycerine; to Mr. Thomas Gilks for his skilful execution of the woodcuts; and to Mr. Morson, jun., for his aid in forming compounds of Atropine, Daturine, and Iodine, suitable for application.

PARK STREET, GROSVENOR SQUARE;

March, 1853.

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THE MEDICATION
OF THE
LARYNX AND TRACHEA.

THE acquisition of new medicines, unless they possess important properties not to be found in the old and ordinary means of cure, and new preparations and formulæ, and novel modes of application, unless offering material advantages over those already employed, are really of so little importance and value, compared with correct observation, sound diagnosis, the weighing of evidence, a clear and simple perception of the requirements of disease and of the special wants of the patient, promptitude and courage, and skill in the management of remedies, that I have never been habitually eager in the recommendation of new treatment. This reluctance has been strengthened when I have reflected how much good I have seen effected by the clear-headed and skilful physician,

with but few and simple means; to how little purpose I have seen formidable operations performed, and numerous and powerful drugs systematically administered. Nevertheless, the duty of the medical practitioner requires that he should adopt new remedies, and new modes of applying old ones, when on sufficient evidence it appears that they may add to his efficiency in the treatment of disease. The local application of nitrate of silver to the interior of the larynx and trachea, as practised by Dr. Horace Green, of America, and now by very many practitioners in this country, is certainly such an improvement in the mode of applying an old remedy. It is to claim attention to an extension of this mode of application, to other remedies, that I venture to lay the few following observations before the profession.

I had so frequently found in the treatment of local disease and local complications, that many medicines were far more efficacious when applied immediately to the part affected, or to its vicinity, than at a distance, that I was glad to learn that a sponge, loaded with the solution of nitrate of silver, and affixed to a probang, could not only without injury but with manifest advantage be

passed through the glottis and the larynx down into the trachea. This practice was so contrary to my preconceived ideas of the irritability of the glottis, and of its intolerance of foreign bodies, that I at first entertained some doubts as to the sponge being really admitted into the windpipe. Such scepticism still prevails with some, who indeed maintain that those who adopt the practice are in total error, in believing they ever penetrate the glottis. I proceeded to test the practicability of the operation: at my first essay I found some little difficulty, but after this, acquiring confidence and some tact in its performance, all difficulty soon vanished. For some time I exclusively employed the nitrate of silver, but I ere long began to use other remedies in the same way; and it is chiefly to relate this extension of the practice, and to propose further steps in the same direction, that I now presume to address my professional brethren. But before proceeding to this, I shall take the liberty, though I can add little new to what is already known, to briefly record the general results of the application of nitrate of silver to the windpipe, which I have noted in the course of my practice.

NITRATE OF SILVER.

The solution of nitrate of silver which I employ is weaker than that which is in general use, and contains only about five grains to the ounce of water. With such a small proportion of silver, I have obtained as good results as with a larger, and I have therefore rested content with that strength. In chronic inflammation of the glottis, probably combined with some œdema and marked with a hoarse and whispering voice, as if issuing from a narrowed chink, and only forthcoming with considerable and appreciable expiratory exertion, I have found the application of the argentine solution very useful. Its effects have not been immediately obvious, but after some days, the ingress and egress of the air have been somewhat facilitated; the voice has become more natural, though in most cases it has continued for a long time far removed from its normal character; the cough which has attended the disease has become less frequent and not so violent; and the extraordinary sound, viz., that of a metallic tube, or of a dry vibrating wooden pipe, which occasionally characterises it, has been somewhat mitigated.

The great debility of pulse which I have observed to accompany this disease, has, in some examples, showed less than the usual reluctance to pass away. It would, of course, be the height of partiality to refer these changes, moderate as they may appear, exclusively to the operation of sponging with the solution of the nitrate of silver, for in no example have I presumed to leave the safety of my patient dependant upon this agent, though fully impressed with its value, when that safety could be increased and rendered more secure by adopting the ordinary, tried, and useful means of cure, in addition to the new practice. While the sponging has been adopted with a full reliance on its usefulness, in every example means have been employed to promote the secretions of the skin and the mucous membrane of the wind-pipe, such as ipecacuanha. Vomiting has been resorted to in some cases, and mercurial alteratives have been exhibited. In a few cases, blisters croton oil, and the vinegar of the Spanish fly have been applied at a little distance, as at the base or the nape of the neck, and the top of the sternum. When the disease has been of a somewhat milder form, the oil of turpentine or the liniment

of ammonia has been laid over the exterior of the larynx, by means of thick porous paper, or chamois leather saturated with these counter-irritants, and retained there five or ten minutes, or sufficiently long to cause rubefaction. This has been repeated according to circumstances, sometimes once, sometimes twice a day. Such treatment as I have described must have had an important influence upon the disease; and it would therefore be both erroneous and uncandid to refer the favorable changes which have occurred under the entire treatment, to a part of it only. It is very requisite for the interests of medicine, and ultimately of the sick, and even for strict habits of exact thought and mental discipline, that the medical practitioner should thus guard himself against a bias and partiality in favour of a new treatment, which is nothing less than foolish and culpable.

In acute inflammation of the glottis, I have not employed the solution of nitrate of silver, because the presence of stimulants on parts suffering from such attacks has always, in my experience, aggravated the disease. The effect of nitrate of silver upon an eye affected with

recent acute inflammation is hurtful ; it increases the afflux of blood, and the activity of the vessels : it aggravates the pain, heat, and swelling. We had better do nothing than do mischief. What a serious aggravation of the disease of the glottis we should have were we to increase its swollen condition, and further contract the aperture for the ingress and egress of the air, already compromised to the very serious danger of the patient !

In chronic inflammation of the larynx and of the upper portion of the trachea, the solution of the nitrate of silver has, in my hands as in others, been very useful in bringing the disorder to a conclusion, and where that has not been accomplished, by reason of its dependance upon incurable disease of the lungs, it has almost invariably afforded very considerable relief, by rendering the cough less frequent and violent, and removing much of the tickling and uneasy sensations at the upper portion of the larynx. In this form of disease the treatment is particularly suitable, whether it be simple or of a specific character. And here, no less than in inflammation of the glottis, it is proper to secure the advantage of other means of treatment, in order that the patient may not

become the mere field of experiment, as to the value of a remedy, but have his interests secured by every means in our power.

In some cases of disease of the larynx and trachea, in which the symptoms inclined to the suspicion that ulceration existed, the same local application of nitrate of silver has been very useful.

Old bronchial affections have in a large majority of cases been similarly benefited.

In the frequent cough and irritation of the glottis, dependant upon the presence of tubercles in the lung, much comfort has been derived from the nitrate of silver. And this benefit has been experienced both when the tubercles have been crude and when they have become softened.

The presence of undoubted cavities in the lungs, from the breaking down of tubercles and the expulsion of their débris, has not prevented this application from being decidedly useful for a time; and even under these circumstances of distress, and almost of approaching dissolution, the patients have been perfectly willing to resign themselves to the operation, fully sensible of the relief it afforded, at least for a time. The mitigation of the cough really proved of great

service, for it admitted of sleep, without which restorative the strength rapidly declines : and in cases of phthisis, characterised with hæmoptysis, the abatement of the cough may truly be tantamount to the prevention of sundry attacks of that alarming and debilitating concomitant. By means of this application, and the internal exhibition of tannin in a case of phthisis, rendered very serious by the presence of a large cavity in the base of the right lung, and by occasional copious discharges of blood from that part, under the agitation and the impediment to the circulation produced by protracted and severe fits of coughing, I was enabled for a time to place the patient in comparative security ; but having candidly explained the true condition of the patient to the relatives, and honestly expressed my fears of the ultimate result, the further treatment was arrested. I received my discharge, in order that the apothecary, who had previously attended the case, and treated it as disorder of the liver, misled by the seat of pain, might work out that cure which, as I was told, I had not procured. One short fortnight after my discharge, the patient was seized with a violent fit of coughing,

blood gushed from the mouth, the bed-room bell electrically tingled, but ere the startled relatives arrived the fair patient was no more. I had intended in this case to follow up the vantage ground I had secured, by making use of a compress I had contrived, for the purpose of promoting the contraction of cavities in the lung disposed to heal, and which I had employed in other cases with some apparent advantage.

I have likewise tried the application of nitrate of silver in the mild form of acute recent laryngitis, but the chief result has been, a moderate abatement of cough and sense of irritation at the top of the throat. It has left the voice but little if at all improved, and I am not sure the decline of the disease has been hastened by it. In such examples of disease, I soon desisted from its employment, feeling convinced that it was not well adapted, and might even aggravate the disease.

The nitrate of silver, when applied to an acutely inflamed organ is an irritant, and may aggravate the morbid condition. To a part affected with chronic inflammation it is a tonic and stimulant, and therefore is likely to be beneficial. To a

tissue, the subject of irritation, it is a sedative. Applied to a membrane, which for some time has been the seat of excessive and unhealthy secretion, it abates and corrects it. These conclusions as to its effects are drawn from long observation on my part, of its employment both externally and internally. The observation of its effects externally applied are so familiar to every one, that I shall add nothing on this point, but I may remark that I have known it to produce stimulant and tonic effects in cases of debility of the stomach, to abate pain in nervous affections of that organ, and when the secretions of the bowels have been free and unhealthy, to abate and correct them, and even to induce constipation to an excess. It is a decided astringent both externally and internally.

Such being the effects of nitrate of silver, it is easy to indicate the diseases and disorders of the glottis, larynx, and trachea, which are suitable for its application. These are chronic inflammation with or without ulceration, spongy conditions of the mucous membrane, relaxed states of that tissue conjoined with copious and morbid secretions, irritation and vascularity short of chronic inflammation.

With the same information as to its effects, it is not difficult to decide that acute inflammatory diseases, from whatever causes arising, are not likely to be benefited by it, but may on the contrary be aggravated by its employment. Whether proceeding from cold, from the spreading of inflammation of the tonsils and adjoining parts, or from the swallowing of acrid poisons and boiling water, the use of nitrate of silver will probably prove injurious. The acute inflammation, likely to be aggravated by nitrate of silver, is what may be called the healthy inflammation, in contradistinction to that form which may be called unhealthy, and which is closely allied to erysipelatous inflammation, from which disease indeed, located in the fauces, it is sometimes a formidable offshoot. In this latter form of disease, even in its early and acute stage, it may be eminently useful.

Having found on experience that the nitrate of silver was too stimulant in some acute diseases, and that it was injurious by further diminishing the secretions already reduced in amount, and that there was room to fear it capable of increasing an already dangerous amount of congestion, I declined its employment in such cases. But

believing that the principle of topical treatment was a good one, I soon resolved to find, if possible, some method of combining the principle of local medication with the employment of other and no-wise objectionable means.

OLIVE OIL.

The bland oil of olives appeared to me to be just such an agent as would lubricate, soothe, soften, and moisten a glottis and larynx, the seat of inflammatory action. The comfort and advantage of the application of oil to irritated, abraded, and inflamed parts on the exterior of the body are universally known.

It might be possible to try its influence on internal parts similarly affected. The favorite practice of anointing amongst the ancients might possibly be carried further and made to alleviate diseases of the air-passages.

Opportunities of testing this novel use of oil were not long wanting. The sponge carefully affixed to the whalebone Probang was dipped in warm water to soften it, and to expand its cellular structure; now squeezed, it was loaded with oil, and quickly passed into the larynx. I

observed that the sponge passed through the glottis more readily than when loaded with solution of nitrate of silver, as indeed an oiled key would pass more readily than another into a lock. On its removal I found the sponge minus the greater portion of its oil. The patient at once remarked upon the great facility of the operation, and said the throat felt oiled, smoothed, and comforted. The dryness and tickling previously experienced had passed off. This experiment was encouraging, and I soon repeated it, and with similar results.

Such have been the uniform and invariable advantages of this simple, easy, and harmless operation, that I have scarcely allowed a case of cough or irritation of the air-passages, either acute or chronic, to escape me without employing it; and I am more and more convinced of its being a useful adjunct to our ordinary practice. Some patients have voluntarily expressed to me how useful it has been to them, and some have purposely returned to me to have this little procedure repeated. I was struck, within the last few days, by the testimony borne in its favour by a gentleman just deceased, who, labouring under

pulmonary congestion, from disease of the aortic valves, requested me again to oil his throat, as he had always been relieved by it, and had had his cough nearly removed by it.

I proceed to relate some of the results of this practice of oiling the larynx. If tested by others, I believe this remedy will give them satisfaction, and warrant its continued employment. It is just possible that a certain amount of partiality on my part to my own procedure may occasion a slight undue colouring in its favour; but I am convinced the results of others and my own will not be materially different. Whilst it is only honest and proper to avoid excessive laudation, it is necessary that the proposer of a new treatment should be alive to its advantages, and be the free exponent of them. If he is not to be the advocate of the practice, who is? Shall we leave the progress of medicine in the hands of drags and dead-weights, and trust the recommendation of these things to the opponents of every novelty! What, then, are the general results? Olive oil applied directly to the glottis, the larynx, and the trachea, has removed uneasiness, sense of tightness, and dryness in these parts. Several patients

have expressed themselves to this effect, and indeed, in every instance in which these feelings have been experienced, much relief has been afforded. The benefit has been produced immediately, and has seldom passed off under two days. The cough has been mitigated in force and frequency; it has become softer and looser. Sometimes, it is true, a fit of coughing has been induced immediately on the withdrawal of the sponge, but this has not been repeated; and this accident has for the most part occurred on the first introduction of the instrument, and when the timidity of the patient has caused its passage into the air-tube to be somewhat difficult.

The voice of the patient has been materially and immediately brought towards its natural pitch and tone in some cases of recent congestion and dryness of the larynx. A gentleman brought his son to me a few mornings ago. The boy was affected with a recent cold in the larynx, and the voice was low, weak, and almost whispering. I passed a soft warm sponge, loaded with oil, down the larynx. On my withdrawing it, the boy spoke, and so materially was his voice improved, that without the least suggestion on my part, the

father at once said, "Why, Thomas, you have got your voice back already." This improvement of the voice recommends the practice for trial in various affections of the voice connected with irritation or dryness. One or two patients have mentioned that the oiling of the trachea has at once relieved them of a load over the front of the neck, and made it more easy for them to speak. Some of my patients have remarked, that they have swallowed more easily after the application of oil to the larynx. When it could be conveniently done, I have oiled the parts once every day, or every second day. Once passing of the sponge suffices, if it is adroitly managed. The sponge should be made soft by being soaked in warm water, then squeezed, so as to expel the water, now loaded with oil. The sponge, at the moment of inspiration, is made to enter rapidly into the glottis and down into the trachea. The oiled sponge slips with great readiness into the larynx. When the sponge returns, it is found minus its load of oil. When there is blood and mucus in the air-passages, the sponge will sometimes display a little of these *fluids* on its return.

I might with ease relate the particulars of many

cases greatly benefited by this practice, but to do so would be to swell a small and unpretending book to an unwarrantable size. I shall therefore here briefly state that it has been useful in many forms of disease, acute and chronic, local and associated with important diseases of the bronchi, the lungs, and heart. Within the last few weeks the advantage of the treatment has been very marked in numerous cases of what may be called laryngeal cold, associated with hoarseness, partial loss of voice, and uneasiness in the front of the neck and chest, and with cough. These cases have been numerous during the late cold and foggy weather ; and all that have come under my care, including children, have been treated with oil, and, without exception, with material advantage.

The inconveniences which follow the practice of oiling these parts are very slight. Some patients dislike the constraint of the tongue, and seem to experience a sense of, or a fear of suffocation. Sometimes they thrust up the tongue, and necessitate the discontinuance of the attempt. In some a spasmodic partial closure of the glottis takes place, and baulks for a time the attempt of the operator. I have never witnessed the slightest

sense of suffocation evinced once the instrument has been introduced. When the sponge is withdrawn, I have in one or two cases observed an abortive attempt at retching, but the patients have been previously liable to retching and vomiting; and this has not arisen, as some might be disposed to suspect, from a bungling mistake in passing the sponge down the œsophagus instead of the trachea.

The advantages of the practice, from the simple and faithful narrative of its effects, must be obvious to every practitioner. It is no small matter, and at so little cost and inconvenience, to remove unpleasant sensations; it is something to reduce the frequency of the cough, to cause it to be softer and looser, and consequently less troublesome to the patient; and it is not without importance that the voice is made more natural.

These things, though important, do not constitute a cure, still there can be no doubt they may materially contribute to that result. At all events, they will not retard it, nor interfere with the administration and efficacy of other curative treatment. The quietude of the glottis, larynx, and trachea, and even of the lungs, heart, and respi-

ratory muscles, which the mitigation of the cough must ensure, is a condition highly favorable to the cure and decline of many diseases. The soft and comforted condition of the parts directly oiled cannot but be useful both in diseases which we may hope to cure, and in those which we must be satisfied merely to relieve.

I have found in addition to these advantages, that the patient has procured more sleep than before. This is a very important point, and has permitted the omission of opiates for a time, which, when the dyspeptic symptoms, the constipation of the bowels, and the general reduction of the secretions which frequently follow their employment, are considered, will at once appear very important.

GLYCERINE.

Glycerine may be advantageously substituted for olive oil, when the patient dislikes the taste of oil, or when oil, as it sometimes does, on being received into the mouth, causes nausea and retching. It is bland and soothing, and sweet to the palate. The sense of wetness, which it induces in the glottis, larynx, and trachea, is perhaps greater

than that from oil ; but as far as I can judge, the sense of blandness is not so great as that produced by oil, and the results of its application are perhaps less enduring than those from the parent-oil. For delicate palates, and for children, glycerine offers then some advantages ; but its price, 10*d.* per ounce in its purified form, is a drawback in some cases. In its less pure state the price is only 4*d.* It dissolves the salts of morphia and atropine, and therefore offers an agreeable medium for their application, as I have found.

I have applied glycerine to the air-passages in a few cases, and it has answered very well. The patients have remarked upon the sense of wetness that it has produced, and have pointed to the upper part of the sternum, saying, that the sensation of moisture was experienced even there. The cases in which it has been employed were marked with very considerable dryness of the trachea. One in which the application proved very agreeable, was attended by a cough having a dry, loud sound, as if the trachea itself, from its extreme dryness, did not merely convey the column of air, but itself formed a sounding pipe, and was thrown into abnormal vibration. This sound was reduced by the application of glycerine.

Being less thick than olive oil, glycerine is perhaps the better suited of the two, where a narrowed state of the glottis, as from œdema, might make it desirable to have due lubrication without clogging.

COD-LIVER OIL.

Besides simple olive oil, I have employed cod-liver oil in some examples of tracheal and pulmonary disease; but the results have not been more favorable than those which have followed the use of olive oil. It is true I have not used it frequently, nor have I persisted in its employment. I was led to the employment of this oil rather from respect for the general opinion of the profession, which is so strong in favour of that medicine, than from observation on my own part of any superiority it possesses over other oils. If cod-liver oil, however, is really a hystogenetic in pulmonary consumption, the introduction of it into the windpipe near the seat of the disease may possess some advantage over its employment by the stomach or by the skin, or it might possibly form a proper addition to these methods of exhibition. The sponge oiled with cod-liver oil, slips into the larynx with the same readiness as

when oiled with olive oil. Cod-liver oil, if it has produced no advantages over and above olive oil, has certainly not been behind it; but it has the disadvantage of leaving a very disagreeable taste in the mouth for some hours. If it is the case, as it is said to be, that cod-liver oil owes what advantages it possesses over olive oil to the presence of iodine, an artificial cod-liver oil might be formed with this medicine and olive oil.

MUCILAGE.

I have in numerous examples of laryngeal and tracheal irritation, both primary and dependant on bronchial, pulmonary and cardiac disease, employed a thin solution of gum arabic, sp. gr. 1040. The sponge has slipped readily into the larynx.

The mucilage has left a sense of softness and smoothness in the parts, and has removed the sensation of tickling. These results have continued for some hours. The mucilage acts mechanically like the olive oil, and its power to allay irritation here is even more conspicuous than in many diseases when introduced into the stomach. It forms a good medium for the introduction of other medicines soluble in water, such as morphia.

Care should be taken that the mucilage is not thick, for it might obstruct the passages by its great viscosity. In most cases where an active medicine is not required, I prefer olive oil to it as a demulcent. The employment of oil and mucilage has proved useful as a defence against cold and fog when the patient has been compelled to go from home.

SEDATIVES.

MORPHIA.

I have introduced morphia and other sedatives in small quantities into the trachea, suspended in oil and dissolved in mucilage; and I cannot but think that the soothing will be greater than when these demulcents alone are employed, particularly where the symptoms depend upon material implication of the nerves, rather than upon vascular activity. When I have employed the solution of morphia with mucilage, I have observed a reduction in the cough and sense of irritation. I have employed morphia to no greater an extent than the eighth of a grain. The practice is perfectly safe. I have not seen the slightest bad effects from it;

and, of course, by exhibiting morphia in this way, we do not induce dyspepsia and constipation as we often do when we give it by the stomach. I think it not unlikely that a larger quantity of morphia might be conveyed with safety into the larynx than into the stomach, as the nervous constitution of the part is less delicate, and less connected with the brain and heart. But it should be remembered, particularly in the case of children, that the expectoration from the trachea, as it is brought into the mouth, may be swallowed, and thus reach the stomach.

ATROPINE.

In several examples of disease of the respiratory passages dependant more upon nervous irritation than on merely increased vascular action, or on thickening of the mucous membrane, in which, indeed, sedatives of any kind are of less avail than some other means, I have employed atropine. I have remarked very sensible results from this medicine; and I think it may be found to possess very considerable advantages in certain cases over other means. A lady, for many years affected with an hysterical kind of cough, short, noisy, shrill, and almost incessant, gushing with

a hissing sound from the glottis, and perfectly dry, came under my care some time ago. By means of the sponge I conveyed the 30th part of a grain of sulphate of atropine, reduced to a fine powder, and suspended in olive oil, to the larynx. There was much less coughing that day. I now employed 1-16th part of a grain, and two days after she told me that it had done her a great deal of good; that instead of coughing every two or three minutes, she had coughed only twice. She requested me to repeat the operation; but, on my demurring, in order to see the full effects of what had been already done, she insisted on having it repeated. This I did; and I have not heard that there has been any return whatever of the cough. I remarked after the last application of the atropine, that the pupil was somewhat dilated; but I was not sure that this was in consequence of the medicine. The known influence of atropine in dilating the sphincters may explain the benefit I have observed, and rationally enough give it a claim to consideration as a means of treatment in disease, consisting of, or dependant on, or associated with, spasmodic action of the closing muscles of the glottis. The sulphate of atropine may be applied in a watery solution; but

in order to secure at the same time the lubrication of the oil, I have caused it to be suspended in olive oil. The powder should of course be very fine ; and before the oil of atropine is used, it should be well shaken up, in order that the atropine may be uniformly diffused. I am decidedly of opinion that the oil is a good medium, both for atropine and morphia. I have employed the oil of morphia in cases of hæmorrhoids, attended with pain and persistent spasm of the sphincter, almost causing strangulation of the extruded piles, with great advantage. It has been thrown by means of a little syringe into the rectum, and has afforded great relief by abating pain and relaxing the spasm ; and I have no doubt that the oil of atropine and of morphia passed into the larynx, and left there, would be no less serviceable. The quantity of oil, of course, should not be great, not above twenty drops. The atropine is very bitter ; on that account the oil of atropine is not liked so much by patients as the pure oil of olives. Of the use of atropine in epilepsy and laryngismus stridulus, I have a few remarks to offer at a subsequent part of this book.

CONIA.

Conia, the alkaloid of hemlock, admits of introduction through the glottis. It mixes readily with oil. It has a very offensive odour, still it possesses decidedly sedative and anti-spasmodic qualities; it may be useful in the form of oil carried into the windpipe, in examples of disease chiefly of a nervous or spasmodic character, such as spasmodic asthma. Opium and atropine, however, are entitled to a previous trial, as the conia is very unpleasant, and little is known of its actual administration in disease. It should be remembered that conia is a virulent poison; and it should on no account be made the subject of ill-considered experiment in the hands of those not well acquainted with it. Conia is in a liquid form, of a brown colour, and of a particularly sickly hemlock smell. When I have used it, I have mixed a drop with a small quantity of oil, and applied a minute fractional part only.

EXPECTORANTS.

It is not improbable that in some examples of relaxation of the mucous membrane of the trachæa, conjoined with copious liquid expectoration and

comparative inability to expel it, the introduction by the sponge of some of the warmer expectorants might be useful. However, this is thrown out more as a conjecture than as a recommendation.

ASTRINGENTS.

In some such cases, too, it is not improbable that astringents, such as tannin, cautiously employed, might be very serviceable, judging of this by their effects in similar diseases in other parts of the body. The effects of tannin are equal, if not superior, to those of any other astringent, as I have very fully shown in my paper on that medicine, published in the *London Journal of Medicine* in 1850, especially when directly applied.

WARM WATER.

I have not had an opportunity of testing the effect which sponging the trachea would have in croup in its later stage, in which the tube is obstructed with thick exudations, difficult of removal by expectorants, and even by vomiting; but I have a strong impression that it would be service-

able. In several cases of chronic tracheal inflammation, I have withdrawn a considerable quantity of thick ropy mucus, to the great relief of the patient. In most cases, simply sponging with tepid water would appear to be the best mode of using this local remedy.

The cleaning out of the trachea by the soft sponge would in such cases remove much obstruction to the respiration. We all know the value of vomiting in this disease, and its chief recommendation is the evacuation of mucous and tenacious secretions which fill up the tube. The employment of emetics need not be omitted and might be adopted almost at the same moment. It is sometimes requisite and advisable in severe cases, threatening suffocation, to proceed to the operation of tracheotomy, but before resorting to this remedy, which is not without its inconveniences and even dangers in the hands of practitioners not accustomed to the use of the knife, it appears to me that it would be wise and proper to try the comparatively simple and easy process of sponging with tepid water. Rough and frequent disturbance of inflamed parts would, of course, be calculated to provoke mischief, but there is no

reason why the operation should not be so gently and rapidly effected as even to be almost undiscovered by the patient. The inconvenience it would occasion, thus gently performed, would be far more than counter-balanced by the benefits which could scarcely fail to result from it.

OILING IN CROUP.

I am not sure that sponging with oil would be productive of benefit in cases of well-formed severe croup in its first development; but I am convinced, from my experience during the last few days, that moderate croupy attacks at the first onset so treated, would be beneficially affected by the treatment, and would be prevented in some cases from becoming more fully developed. I have observed that during the present severe frost, attacks of cold in the throat, having a cough and a constriction resembling those of croup, have been much relieved by the practice.

It has rendered the cough less hard and violent, and the patients have expressed themselves as feeling the parts smooth, and free from irritation and distressing dryness: they have swallowed with less pain. Under all the circumstances I would

venture to recommend the gentle introduction of a small sponge well loaded with oil, in incipient cases of croup. If the practice gives relief, it should of course be continued; if, on the other hand, it causes pain and uneasiness, the practitioner should avail himself of the lesson he has got, and discontinue further interference of the kind.

OILING AFTER VOCAL EXERTION.

In cases of dryness and uneasiness of the throat from loud speaking or reading, the application of oil in this way seems indicated. It might be very serviceable to clergymen and other public speakers, who have delicate and irritable vocal organs. After great exertion in singing, it might likewise be very useful.

OILING IN LARYNGISMUS AND EPILEPSY.

It appears to me, that it is not at all improbable that in laryngismus stridulus, relaxation of the glottis would be promoted by the gentle application of oil to its lips. The relaxation thus promoted, the passage of the atmosphere into the lungs would be more readily effected by the sudden contraction of the diaphragm and other inspiratory

muscles, which can always be instantly effected by the sudden application of cold water to the head or other sensitive part of the body, as I have frequently observed in my treatment of this disease. Under the soothing influence of oil carefully applied, the glottis will yield to the powerful contraction of the diaphragm, induced by the sudden dashing of cold water. In the same way, the application of oil to the glottis in cases of epilepsy might cause or at least promote its relaxation, and put an end to that state of spasm, which is said to be an important link in the causation of the disease, and which is certainly a part of the convulsive phenomena. The practice, from the violent agitation of the patient, may doubtless be difficult, but it will be less so than tracheotomy, and to my understanding less hazardous. Tracheotomy is an operation I am bold enough to say cannot be undertaken in any but a very small proportion of cases, to say nothing of the inconvenience and the hazard of the whole proceeding. Let the two plans be judged upon their respective merits. Let not authority, nor preconceived opinion decide the point. It is not a point suited for such tests, for it is one which

may be settled by a better and a first-class test, that of the good common sense of every practitioner, guided by experiment and experience.

The practice of applying a strong solution of nitrate of silver to the glottis, recommended by Professor Watson, of Glasgow, in cases of epilepsy, in all cases except those very rare ones in which suffocation or death by coma may be really apprehended, is doubtless far more proper than tracheotomy, but the application of oil, I believe, from what I have observed in many affections of the glottis and larynx, will prove not much, if at all, inferior to the application of the caustic.¹ During twenty years' practice of my profession, I have not known any one of my epileptic patients to be carried off by suffocation, during an ordinary fit of this disease.

ATROPINE IN THESE DISEASES.

The oil or the mucilage might be tried in combination with atropine in quantities varying with the patient's age. As already stated, I have successfully applied the oil of atropine to

¹ London Journal of Medicine, vol. iv, p. 640.

the glottis. Lusanna has administered this medicine internally, with advantage, in epilepsy. He dwells upon its power to paralyse the constrictor muscles of the pharynx and the sphincters. It is true, time would be lost before its narcotic influence could be secured.¹

Such an important operation as tracheotomy, should not be lightly performed, and, of course, it cannot be the object of the distinguished physiologist who proposed it in these diseases, to recommend such a measure in the ordinary cases of laryngismus stridulus and of epilepsy which fall under the eye of the practitioner. In the first place, the thing cannot be done in time; the attack of laryngismus supervenes without giving any convenient time for summoning the practitioner, and for making operative arrangements. It is true the operator, though not in time for the present attack, might provide for future ones, but it requires no great acuteness to perceive the repugnance parents would express towards a formidable operation, which at best could only very partially meet the disease of their child, in possible future attacks;—attacks too

¹ *Gazetta Medica Lombarda.*

which under suitable treatment directed to the disease in its first steps, might be altogether prevented. As to epilepsy, the closure of the glottis is only one of many spasmodic phenomena which characterise the disease, and to think of curing epilepsy by obviating the closure of the glottis, is little better than expecting to put an end to it by amputating the convulsed arm. Doubtless, it may deprive the closure of the glottis of its immediate danger of causing suffocation, but from experience, we know that this is not great, and it must leave the disease in the nervous centres exactly where it found it, and cannot obviate exciting causes in other parts of the body.

HOOPING COUGH.

The medication of the glottis and larynx in hooping cough is well worthy of consideration. Though it may not produce a cure, it may certainly lead to a mitigation of the cough, and consequently diminish the frequency of such accidents as I have known to attend it, viz., convulsions, coma, ecchymosis of the eyes, and general emphysema.

MODE OF ACTION.

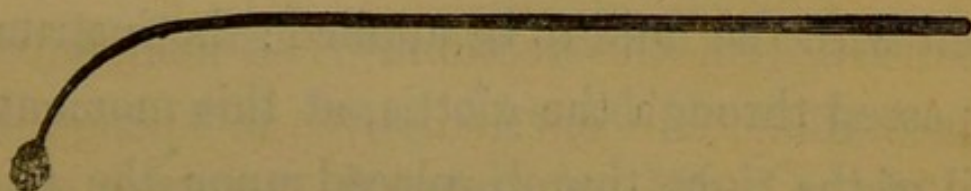
The mode of action of the different agents recommended, requires very little notice. Oil, mucilage, water, and glycerine, act mechanically. The sedatives, of course, exert a local influence upon the nerves of the parts. The nitrate of silver produces a change upon the structure of the mucous membrane, and alters the action of the vessels. But I am of opinion that the sponge itself may not perform an altogether insignificant part in the process. I think the dilatation of the glottis, may be useful in the more chronic affections, by separating the edges for the time, and leading to the absorption of fluid in the cellular tissue. Of course we could not trust to such momentary dilatation doing much in this way in cases of great effusion, which will demand timely tracheotomy, but when it is moderate, gentle pressure over a very short space may be beneficial. I am inclined to believe that the sponge, particularly when oiled, may by its dilatation assist in the abatement of spasm of the muscles of the glottis. We all know the general fact that moderate pressure over a twitching or cramped muscle will

relax and quiet it. Besides this, I have ascertained that a spasmodic condition of the sphincter ani in piles and diarrhœa, is moderated and deprived of its urgency by gentle dilatation. An elderly gentleman, who suffers from occasional prolapsus of the gut, and who is under my care, has long been in the habit of introducing a rounded dilator into the anus, and finds relief from pain and irritation in so doing. And I am informed that the use of a similar dilator, which can from its shortness go no farther than the sphincter, was much employed, and very advantageously too, by an eminent surgical practitioner, in diseases of the rectum. The moderate and gentle dilatation effected by the sponge, may really prove a sedative, and materially alter the spasmodic and excessive action of the constrictor muscles of the glottis.

INSTRUMENTS.

The instrument which I employ and which I find most manageable and efficient, is formed of a slender, flexible whalebone, about a foot in length and of the thickness of a crow quill. At

the extremity which is to pass through the glottis, it is curved like a male catheter. At this extremity a small sponge is affixed by careful sewing. The sponge is very soft, and projects a little beyond the extremity of the whalebone. For the adult it is not larger than a horse-bean ; for the child, one reduced in size in proportion to his age is employed. The larger one will readily imbibe half a drachm of fluid. It is with this instrument the solution of nitrate of silver, oil, or other agents are applied to the glottis, larynx, and trachea, by myself.

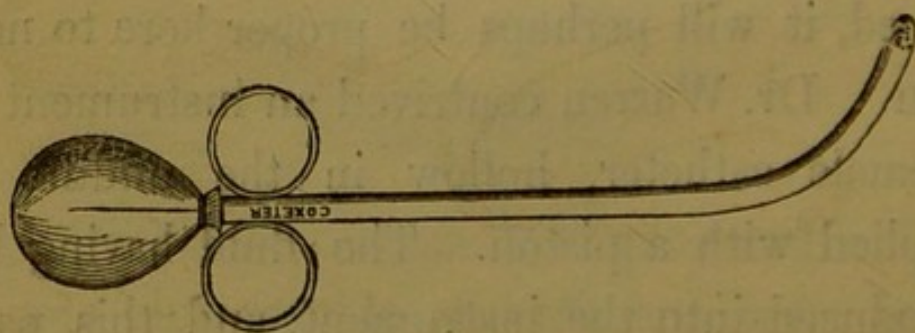


Other instruments have been contrived, and though I prefer the probang which I have described, it will perhaps be proper here to notice them. Dr. Warren contrived an instrument like a female catheter, hollow in the middle and supplied with a piston. The fluid having been introduced into the instrument, and this passed through the glottis, the piston was forced forward and the fluid ejected by several small orifices

into the windpipe, forming in short a shower syringe.

Dr. Theophilus Thompson has contrived a similar instrument, but both of them are somewhat expensive and rather complicated.

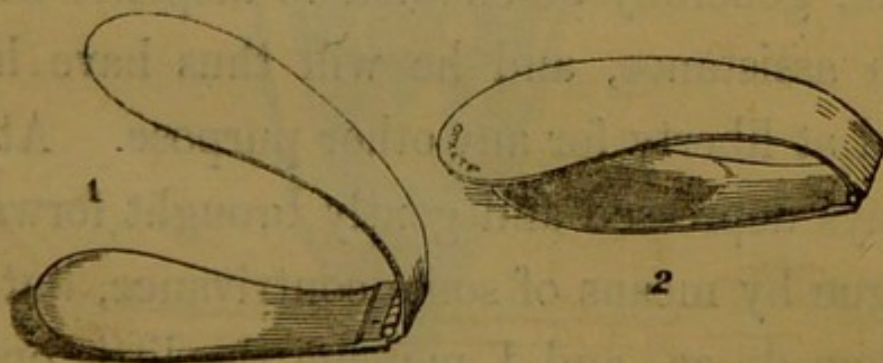
Mr. Coxeter, a skilful and careful artist, has contrived a very handy instrument of the kind, capable of easy management with one hand. It is like a female catheter, supplied with several fine apertures for the discharge of the contained fluid. It is supplied at the extremity held in the hand with a small elastic gum bag, about the size of a walnut. By means of its elasticity, it fills itself with the fluid to be applied; the instrument is passed through the glottis, at this moment the nail of the right thumb, placed upon the middle of the elastic bag, is forced forward, and the fluid is discharged.



Yet though this is a very clever instrument,—in my own hands I find the sponge to answer

every good purpose, and I therefore prefer it. The process is so simple with the sponge, being one of mere introduction into the windpipe, that for the beginner, at least, I think it is best calculated. Nothing is required but the simple introduction of the sponge: the discharge of the fluid is effected for us. The quantity of fluid introduced is very moderate, and can be regulated to a drop. When a considerable quantity of fluid is required, of course the instrument invented by Mr. Coxeter will be found superior to the sponge.

With most practitioners, the operation of conveying the nitrate of silver to the air-passages is effected with the aid of an instrument to depress and bring forward the tongue. A tongue depressor is made by Mr. Coxeter for



the purpose, and consists of a spatula of metal, like the handle of a soup-spoon. It is gently hollowed for the reception of the back of the

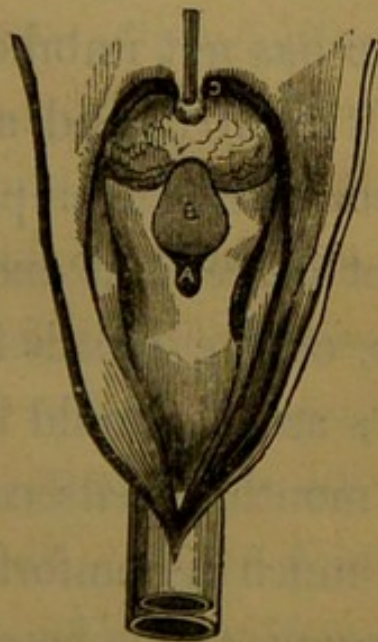
tongue, and is moderately curved downwards where it comes in contact with the root of that organ. A smaller one is employed for young subjects. Where economy is to be studied, and where, as is the case in many places, the moderate remuneration of the practitioner does not admit of providing himself with every surgical luxury that comes out; the handle of a table-, or a dessert-spoon, will supply the place of this instrument, by no means very unsatisfactorily. The handle of a spoon, a strong paper-cutter, or the instrument expressly invented, will be found necessary in some cases, particularly when the patient either cannot or will not keep his tongue in subjection and at the bottom of the mouth. But after a little practice the operator will, I think, generally be enabled to dispense with any such assistance, and he will thus have his left hand at liberty for any other purpose. At first I always depressed and gently brought forward the tongue by means of some contrivance, but I now seldom do so, and I manage the little operation more adroitly, more rapidly, and with less inconvenience to the patient, than when I used to depress the tongue. Instead of employing my

left hand in holding a spatula in the mouth, I keep it ready for another purpose, and avoid annoying the patient by constraining his tongue.

A small mirror such as dentists use will be useful to bring the glottis into view, in order to the examination of that part. It should be made warm before its introduction into the mouth.

THE INTRODUCTION.

Before the sponge is used, it should be carefully inspected. The operator should satisfy himself that it is firmly sewed to the whalebone.



A. Glottis.

B. Epiglottis.

C. Uvula.

After Erasmus Wilson.

Whatever application is to be employed, the sponge should be well cleaned, and soaked in warm water. The air should be expelled from its cells, and the sponge should then be loaded with the fluid to be employed. I direct the patient to hold his head well up, then open his mouth wide; I then place my left hand on the left ribs, and hold the sponge near the mouth. The moment I find the ribs begin to rise in the inspiratory act, that moment I introduce the sponge into the mouth, and, clearing the tongue, at once pass it with the greatest facility through the glottis down into the larynx, and, if need be, into the trachea, and then immediately withdraw it. If the sponge has not imbibed all the fluid I desire to apply, I re-fill it, and again apply it as before. No force should be employed; if the instrument does not descend at once, it is either in the wrong place, or the glottis is spasmodically closed against it; and it should be at once withdrawn from the mouth, for its continuance there gives the patient much discomfort. If the patient throws up his tongue, and opposes the procedure, the attempt should for the moment be dropt, and the restive subject re-assured. Another attempt

when the patient's attention is diverted, will now succeed ; if not, the operation should be postponed to another time.

CONTRA-INDICATIONS.

I scarcely know of any condition which would absolutely preclude the introduction of the sponge loaded with some one or other of the different agents of which I have spoken. Perhaps the almost complete closure of the glottis by reason of great œdema should absolutely forbid the use of the sponge.

Aneurism of the great vessels near the heart should, as a matter of prudence, be held to make the procedure hazardous. The agitation of the respiratory act, which sometimes occurs, as much, it is true, from timidity as from the actual operation, might under some circumstances prove the little additional violence necessary to burst the slender walls ; and such a result could not fail to be very unpleasant. When death is evident from impending suffocation, wisdom points out the necessity of not being officious ; for even though death has been looked for for hours and days as

totally unavoidable, attendants and relatives I have frequently found much disposed to throw the onus of the decease upon the last act of the surgeon, or the last medicine prescribed by the physician.

The nitrate of silver, it appears to me, should not be employed in the first stage of smart acute inflammation.

These contra-indications relate to disease, but though they are seldom alluded to, there are contra-indications not less in respect to the practitioner. If he is nervous or tremulous of hand, or of ill-assured presence, the operation in his hands is contra-indicated, and he had better trust to other means of treatment.

CONCLUSION.

My object is now accomplished. I desired to record my experience of the medication of the windpipe, and to make a few suggestions as to the possible extension of the plan of treatment. It was not proposed to describe the diseases of the air-passages, nor their general treatment. These subjects are well treated in numerous works well known to the profession, and it forms no part of my object to attempt that which is totally unnecessary.

The plan of treatment proposed will not be found incompatible with the usual treatment of any one of the diseases to which reference has been made, certainly it will not render that unnecessary. Epilepsy and laryngismus, though treated with the sponge, will not the less require the employment of means directed to the nervous system, and to those disorders in other parts, which prove their occasional causes.

Pertussis, glottitis, laryngitis, and cynanche

trachealis, will demand the use of the usual general and local means, in addition to the application of any agents to the interior of the windpipe. Calomel, ipecacuan, antimony, and other medicines calculated to promote the abatement of inflammation, and to appease constitutional disturbance, will still be useful, and must be employed. Though we sponge the glottis, the scarificator may still be useful there; and while we medicate the interior, the exterior of the throat need not pass without its proper complement of attention, in the shape of leeches, fomentations, and counter-irritants. Attention to the temperature of the atmosphere, suitable clothing and a diet duly selected and measured by the character of the disease, and the many circumstances of the patient, will not be the less valuable, because we add to our means of cure some which reach to the interior of the windpipe, the immediate seat or the immediate vicinity of the disease.

Properly regarded, properly performed, and seasonably put in practice, I am convinced the plan of treating the interior of the air-passages here recommended and suggested, even though

my experience of it has not extended over many months, will be found by others a somewhat valuable addition to the means of treating some forms of disease, and some minor disorders. I desire attention to it in this light only. It is, and it can be, nothing more than an additional aid in our contendings with disease.

